The RUBBER AGE

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Xmas Seals

THE Christmas season is fast approaching. With its gift giving there also comes certain responsibilities. One of these is the contribution one can make to the less fortunate. Many of these responsibilities should be pleasurable privileges,—such as is the case of the purchase of Xmas Seals.

It is not necessary to mention the great work done by the organizations back of this movement. One's spirit of both Thanksgiving and Christmas can best be crystallized into genuine material good by the purchase of these Xmas Seals.

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LATE NEWS of the Industry

Tire Dealers Discuss Wide Range of Subjects at Annual Convention

Chain Store Selling, Local Association Organization, the Used Tire Situation and the Question of Federal Taxes Affecting Dealers Represent Chief Problems Debated

SALE of tires by oil companies, the inauguration of local association programs for tire dealers, the handling of the used tire situation and Federal taxes as affecting tire dealers were some of the major points discussed by the National Tire Dealers' Association at its sessions, held in Atlanta, Ga., November 14-16.

While it was generally felt that the sale of truck and automobile tires by oil companies was unfair competition, dealers also agreed that the evil could not be stopped by regulating and legislating.

One practical suggestion was that manufacturers allow tires to be sold to the oil companies under their name but not under the standard tire names. Probably the most practical suggestion offered was that tire dealers combat this evil by means of more thorough knowledge of tires and better business methods.

Secretary Trimborn presented the local association program as put into effect by the Dayton, Ohio, tire dealers as the best that he had encountered and the association asked that copies of this program be sent to dealers and associations interested to serve as a model for local programs during the coming year.

In the handling of the used tire situation a majority of the tire dealers reported that they were selling second and third tires for what they would bring and destroying those too used for safety by cutting off the bead. While some dealers wished to eliminate the sale of used tires entirely, a number reported that this would destroy the market for many tires, since many people at present could only afford seconds, and it was a better practice "to keep the cars rolling." It was generally felt that some arrangement by which manufacturers would take back used tires and keep them off any future market would be beneficial, but no practical suggestions were offered as to how this could be effected.

The association was urged to consider the possibilities of including tire inspection in the regular automobile inspection now required by several states. One dealer reported that following a misquoting of his state motor vehicle commissioner that in the future automobile tires would be inspected, the sale of tires at once increased materially.

The secretary of the national association was asked to prepare data and statistics on the possibilities of tire inspection, as well as to secure a model law requiring tire inspection for consideration by the different state groups.

In this the danger of using old and wornout tires was sharply emphasized.

Regarding Federal taxation, dealers reported that they must either absorb the Federal tax on tires as passed on by the manufacturers or lose their state and municipal business.

Addresses by P. B. Means of the Firestone Tire and Rubber Company and Frank A. Seiberling, president of the Seiberling Rubber Company, featured the sessions. Mr. Means stressing the necessity of the tire dealer handling batteries and other accessories to supplement his tire business and give service to his customers in order to make a profit under present conditions, and Mr. Seiberling expressing confidence in the future of the independent tire dealer who would put into practice real merchandising methods in his business.

The sessions were well attended and the discussions aroused a great deal of interest among the members.

October Rubber Consumption Falls to Lowest Since 1923—Stocks Increase

CONSUMPTION of crude rubber by manufacturers in the United States for the month of October amounted to only 21,018 long tons. This compares with 22,491 long tons for September, 1932, and represents a decrease of 6.5 per cent according to statistics released by the Rubber Manufacturers' Association. This is the lowest consumption since November, 1923.

This organization also reports imports of crude rubber for the month of October to be 35,473 long tons, an increase of 20.2 per cent above September, 1932, but were 14.3 per cent below October a year ago.

The Association estimates total domestic stocks of crude rubber on hand October 31st at 373,823 long tons, which compares with September 30th stocks of 365,789. October

stocks show an increase of 2.2 per cent as compared with September of this year, and were 36.7 per cent above the stocks of October 31, 1931.

The participants in the statistical compilation report 40,176 long tons of crude rubber afloat for the United States ports on October 31st. This compares with 46,188 long tons afloat on September 30, 1932, and 51,320 long tons afloat on October 31, 1931.

Tire Production in September Declined But Factory Shipments Show an Increase

SHIPMENTS of pneumatic casings for the month of September amounted to 3,082,285 casings, an increase of 16.1 per cent over August this year, but were 21.6 per cent below September, 1931, according to statistics released by the Rubber Manufacturers' Association.

The Association reports production of pneumatic casings for September to be 2,538,720 casings, a decrease of 17.8 per cent under August this year and 20.0 per cent below September, 1931.

Pneumatic casings in the hands of manufacturers September 30th amounted to 6,096,098 units, a decrease of 8.5 per cent below August 31st stocks and were 25.3 per cent under September 30th stocks a year ago.

The actual figures are as follows:

Pneumatic Casings

	Shipments	*Production*	*Inventory*
September, 1932	3,082,285	2,538,720	6,096,098
August, 1932	2,654,863	3,089,201	6,658,974
September, 1931	3,931,860	3,171,969	8,158,453

Tire Dealers' Association Answers Car Engineers' Opposition to Super-Ballons

IN AN effort to combat the opposition of automotive engineers to the new super-balloon, "doughnut," tire, the National Tire Dealers' Association has just issued a bulletin in which it is claimed that the public is demanding the new tire and that car engineers are taking the wrong stand in opposing the "doughnut" type as new standard tire equipment. The Association claims that the growing popularity of the new tire demands its acceptance by the tire engineers.

"Car designers at Detroit have indulged in a lot of criticism and have greeted the 'doughnut' tire with anything but a friendly attitude," says the bulletin, "but down in their hearts they know that the 'doughnut' is coming, and they have to accept it as a definite development in automotive design.

"Much work will follow in the 'doughnut' train, for its design and construction are so different that there will be very serious developments resulting from its adoption, and these developments will be in the way of service as well as in the way of sales.

"New cars coming through with them and engineered for them will, of course, handle them better than cars on which they are replacements, but in any case the 'doughnut' means more frequent servicing, more frequent check-ups and as a result more frequent contacts with the tire dealer.

"Within the next few years the tire dealer will have a lot to learn about wheel alignment. In order to meet the questions involved he will have to put in a department devoted to caster and camber gauges and a lot of other equipment necessary to overcome shimmy, wheel fight and shock. Inflation will be watched down to the fraction of a pound and a lot of old service jacks will be replaced by others better suited to the new running gear.

"The smart tire dealer will watch these developments closely, for a lot of this work belong primarily to him, and to allow other factors to get it away from him would be shortsighted to say the least."

Chicago Rubber Chemist Group Hear Welch on "Future of Industry in Midwest"

DUE to the resignation of U. H. Parker, chief chemist of the Featheredge Rubber Company, S. Collier, chief chemist of Johns-Mansville Corporation, Waukegan, Ill., has now become chairman and will direct the activities of the Chicago Group for the coming year.

The Chicago Group met at the Midland Club, 172 West Adams street, Chicago, the evening of November 11 for dinner and a program of papers and entertainment. For several years various chemical organizations have used the Midland Club as their meeting place, but this was the first occasion for the Chicago Group, Rubber Division, A. C. S. An excellent dinner was served.

The chief speaker of the evening was William Welch, president of the Midwest Rubber Reclaiming Company, who discussed as his subject the "Future of the Rubber Industry in the Midwest."

The speaker outlined the growth of the rubber industry with its movement from the Atlantic Seaboard to the Midwestern States. The fact that 90 per cent of the automobiles are manufactured in this territory and since the automobile companies are large consumers of rubber products was one factor that was brought out. The speaker described that a recent survey showed that the Western and Southwestern concerns purchased the majority of their rubber items from the eastern states and that the rubber factories in the Mid-west would be closer to their markets and would be admirably located for raw material.

At the meeting, Mr. S. Collier, the new chairman for the 1932-1933 season announced plans for the very interesting program in the middle of January. Two unusual features will be presented on that evening.

The Chicago Rubber Group has decided to make their headquarters for the balance of this year at the Hotel Sherman, Chicago, and special arrangements have been made with the owners of this hotel to again be favored with the services of the famous Ben Bernie Blue Ribbon Malt Orchestra. The attendance from men living outside of Chicago has been increasing rapidly and due to changes that have taken place during the past year, those interested in receiving notices of these meetings are requested to send their name to the Secretary, B. W. Lewis, c/o Wishnick-Tumpeer, Inc., 365 E. Illinois St., Chicago, Ill.

The Chicago Rubber Group does not charge any dues and the privilege of membership is accorded to all who wish to come.

Giant Tire Corporation Announces the Acquisition of the Quaker City Rubber

THE Master Tire and Rubber Corporation, Cuyahoga Falls, O., entered the mechanical goods field with the announcement that it had acquired assets of the Quaker City Rubber Company, Philadelphia.

Acquisition of the Philadelphia company gives Master assets of $5,000,000, annual sales of $6,000,000 and a total of 1,200 employes, according to W. P. Cline, vice-president and treasurer of the Falls corporation. Master is a holding company operating the Falls Rubber company, the Cooper corporation and the Giant Tire and Rubber company.

The latest unit in the consolidation at Philadelphia adds considerably to the line of products manufactured and marketed under the name of the Master Tire company. The Quaker plant makes hose, belting, gaskets, stair treads and matting.

(Other news of the industry will be found on Pages 139-142)

The Trends in RUBBER PRODUCTION

Low Prices Are Definitely Affecting Estate Production, But Native Growers Continue to Advance Production on Family Areas — Production Will Excess Consumption for Some Time

By E. G. HOLT

Chief, Rubber Division, Department of Commerce

THE THIRD quarter of 1932 has resulted in unmistakeable evidence that estates producing rubber in both Malaya and Netherlands India are at last seriously curtailing their operations.

Estates in Malaya and Ceylon

The peak of production on Malayan estates was during 1930, when except for the tapping holiday in May, monthly production averaged better than in 1929. After the first quarter of 1931, the output of Malayan estates over 100 acres declined around 5 per cent, but increased again when gold parity was abandoned, and during the first five months of 1932 production was at a new high record rate which, continued for a year, would yield 256,000 tons. Since May the decline has been steady and continuous through September, and the low level of August and September production is a record low for months back to the end of 1928. The annual production rate indicated by September output is only 221,000 tons, 14 per cent below the peak. It is certain that a reduced rate of production will continue for many months. The question is—how low may the production be expected to fall?

It is possible that the record of Ceylon may help in answering this question. The production of 102 estates in Ceylon, as reported monthly by the Rubber Growers' Association, began definitely to decline in the last quarter of 1930. This decline continued until June, 1931; from June to December the reduced level was maintained at about 60 per cent of the 1929 production.

During the first seven months of 1932, the rate of output was still maintained at 60 per cent of the 1929 figure, although in August and September it was slightly lower. It might be argued that Malayan production (on estates) will drop until it reaches a certain lower level and then move sidewise, as has happened in the case of Ceylon. Since climatic and seasonal conditions of production in Malaya are more ideal than in Ceylon, it seems logical to expect less decline for Malaya than for Ceylon; perhaps a drop of 20 to 25 per cent from 1929 levels would be logical for Malaya as compared with the 40 per cent decline in Ceylon.

Estates in Dutch East Indies

Estates in Netherland East Indies pursued a policy of increasing outputs for a longer period than elsewhere, but the trend line for production in Java has differed materially from that for the Outer Possessions, this conclusion being based on the *preliminary* estate production statistics issued by the Government there.

The trend of production in Java continued steadily upward until September, 1931, when it dropped slightly. The annual rate of production (adjusted for seasonal) averaged 70,000 tons for the March-August period of 1931, but declined to 65,000 tons for the following 7 months ended March, 1932. Since then further declines have occurred with each subsequent month and July production was at the annual rate of 50,000 tons. There is some evidence that these preliminary statistics are now 2 to 3 per cent less complete than in 1931, but even on the basis of the officially estimated complete figure for July, 1932, the Java annual production rate indicated was but 52,500 metric tons, a decline of 25 per cent from the peak March-August, 1931, average. Statistics issued by the Rubber Growers' Association show that 41 British companies operating in Java produced 31.9 per cent less in August, 1932, than in August, 1931, while the few companies of other nationality, which reported to them, showed *increased* outputs this year. Of the 41 British companies, 9 reported increases and 32 declines for August, 1932, and the British-owned estates' average decline is noticeably greater than the average for all estates in Java.

In the Outer Possessions of Netherlands India, the production trend was quite steadily upward during 1929, 1930, 1931, and the first five months of 1932. The figure for June, 1932, was almost identical with that of the preceding June, and July was sharply lower, in fact the lowest July total for the past four years. It therefore appears that in Sumatra the downward trend has just begun to be pronounced. The peak of production there was an annual rate of 102,500 tons during the last half of 1931 and the first four months of 1932; July, 1932, production was at the annual rate of 79,300 tons, an indicated decline of 24 per cent below the peak, although still not far below the production for 1929 and 1930. On the basis of officially estimated 100 per cent estate output in the Outer Possessions in July, 1932, production that month was at the annual rate of 84,200 metric tons. As in the case of Java, the preliminary statistics are apparently slightly less complete this year than in 1931.

It thus appears that estate outputs have been generally reduced in recent months in Malaya, Java, and Sumatra, and that in August-September estate outputs in Ceylon suffered a further slight decline. In Indo-China, exports (and apparently production), have been well maintained up to date, but in British Borneo, India, and Siam the production is this year drastically curtailed. It may be regarded as particularly significant that the production on estates continued to fall during the months of 1932 when the price of rubber was strengthening.

Native Rubber in Malaya and Ceylon

The production curve for native rubber growers differs materially from that for the large estates. Until this year, such reduction in rubber production as has occurred is more the result of native than estate curtailment. In general the line of native output has followed the price curve fairly quickly, both in declines and recoveries.

Malayan small-holders reached the peak output in the third quarter of 1929, with a rate of production that would yield 217,000 tons in a year, but their total 1929 output

was about 200,000 tons. Production declined steadily throughout 1930, and in the last quarter of that year was at an annual rate of only 188,500 tons. During 1931, the monthly figures were very erratic, but in the last quarter of 1931, following higher prices in Straits currency, the rate of output definitely increased to 212,000 tons. In January and February, 1932, the rate declined drastically, and March showed no recovery from February, but the level for April-May improved, and the third quarter output was still better. A recent report states that the improvement in rubber prices caused coolie tappers in several instances to leave the large estates and go to work for natives in Malaya during the third quarter—this may be a harbinger of a labor difficulty that will be encountered by estates when rubber prices begin to definitely improve.

Production of Malayan small-holders for the first half of 1932 was at an annual rate of 165,000 tons, for the third quarter 174,000 tons. Whether it will in future go to lower levels than in the first half of 1932 depends on prices. If prices should pursue an irregular sidewise course, the probability is that their production would not decline to new low levels.

There are no definite figures for native outputs in Ceylon, but indications may be drawn by comparing the course of total exports from Ceylon with the production of 102 large estates reported by the Rubber Growers' Association. This comparison shows that total exports increased sharply in the last quarter of 1931, whereas estate production remained low, indicating that natives reacted the same as in Malaya to the higher prices in local currency following British abandonment of the gold standard. A further fact is that whereas the estate outputs are averaging barely 60 per cent of the 1929 rate for the first 8 months of 1932, total exports are running about 62 per cent of the 1929 rate, which indicates that natives have maintained their outputs better than the large estates in Ceylon this year.

Dutch Native Rubber

The trend line of Dutch native rubber exports followed an upward course from 1922 to the end of 1927, but even during this period the statistics clearly show the responsiveness of native output to price conditions. The dip in prices in mid-1923, and the further dip in mid-1924 resulted in temporarily reduced native shipments; the record high prices of 1925 were accompanied by abnormally high shipments; the decline in prices during the first half of 1926 found a quick answer in lower exports, and the dip in prices during the last half of 1927 had a similar temporary effect.

After the sharp decline in prices and native production in the first four months of 1928 resulting from announcement of the end of restriction, production again increased, and continued an upward swing through the first quarter of 1930, when peak production was attained at a rate of 120,000 tons dry rubber a year. As the price fell from 15 cents to around 8 cents, toward the end of the year production fell to about 50 per cent of the peak; hardening of prices temporarily at the end of 1930 resulted in a rebound in Dutch native exports to about 80 per cent of the peak rate, remaining at that level during the first half of 1931; with the decline below the six-cent price level, exports fell to about 65 per cent of the peak rate, where they remained through January, 1932. Production dropped sharply in February, March and April of this year, and then leveled out for the next three months at a rate averaging only 35 per cent of the peak, or 42,000 tons annually. Available data on wet rubber imports into Malaya, however, shows that Dutch native exports increased considerably in August and again in September, indicating continued rapid responsiveness to prices even at the low levels of this year.

Summary

The evidence tends to show that a reduction in estate production, once adopted, is a fairly permanent thing, and that increased production later on will wait upon price conditions that will justify reopening for a new long period of production. If this is true, it is possible that many of the estates which are ceasing operations may be permanently abandoned. For the estates which do not close down, available evidence indicates continued increased production as the general policy.

For native producers, both in Malaya and Netherlands India, the low point to date (and perhaps their record low for years to come) was passed during the second quarter of this year. In recent months the curve of estate production in each of the principal producing regions has been downward, while it has been upward for native producers.

The world capacity for rubber production will be in excess of prospective consumption for some time. During the past two and one-half years, the estates have maintained production better than the natives. It is possible that this condition might be reversed during the next two years, owing to the more rapid responsiveness of natives than estates to price influences. Only a few months are required to bring out more native rubber under the stimulus of rising prices, and rubber production is now at least as quickly responsive to price conditions as any annual crop. The price average of 1932 is shown to be insufficient to sustain estate production even in Malaya with depreciated currency.

Census of Manufacturers: 1931

Rubber Goods Other Than Tires, Inner Tubes, and Boots and Shoes

THE Bureau of the Census announces that, according to a preliminary tabulation of data collected in the Census of Manufactures taken in 1932, the total value (at f. o. b. factory prices) of rubber goods other than tires, inner tubes, and boots and shoes produced in the United States in 1931 amounted to $191,232,899, a decrease of 40.9 per cent as compared with $323,361,070 reported for 1929, the last preceding census year. Of the 1931 total, $152,842,188 was contributed by establishments engaged primarily in the manufacture of the specified class of rubber goods and $38,390,711 by establishments engaged primarily in other lines of manufacture. The more important items which enter into the total for 1931 are as follows: Rubber heels, 244,779,481 pairs, valued at $11,543,188; rubber soles (including composition or fiber), 59,648,648 pairs, $8,321,341; rubberized fabrics, 59,320,652 yards, $16,065,336; rubber belting, 28,625,096 pounds, $12,478,521; rubber hose, 195,871,253 feet, $20,948,870; hard-rubber goods, $11,372,885; reclaimed rubber (for sale as such), 213,765,690 pounds, $9,852,819; druggists' and medical sundries (except rubber gloves), $7,318,255; rubber cement, 5,101,665 gallons, $3,129,525; rubber mats and matting, $4,577,852.

Statistics for 1931, with comparative figures for 1929, are given in the following table.

	1931	1929	Per cent of decrease
Number of establishments....	376	412	— 8.7
Wage earners (average for the year)	33,046	40,226	—17.8
Wages	$34,654,857	$50,278,617	—31.1
Cost of materials, containers for products, fuel, and purchased electric energy....	$65,599,415	$114,674,244	—42.8
Products, total value.....	$155,932,216	$244,745,737	—36.3
Rubber goods	$152,842,188	$238,301,010	—35.9
Other products	$3,090,028	$6,444,727	—52.1
Value added by manufacture	$90,332,801	$130,071,493	—30.6

Rubberized Suede Cloth

By S. G. Byam

Rubber Chemical Division, E. I. du Pont de Nemours and Company

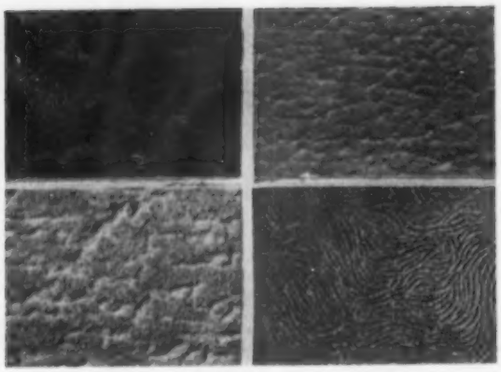
DURING the past few years only a few essentially new types of fabrics have been developed for use in the raincoat and sport garment industries. One of these materials is a rubberized fabric having a suede-like surface known to the trade by various names such as Peach Skin, Doe-Tex, etc. Although it has been known for several years, this suede-like fabric has been sufficiently difficult to manufacture that it has not until this season been available in such quantities as to permit wide distribution among the garment manufacturers.

The popularity this year of garments made of suede fabric is widespread and is attested by their very frequent appearance wherever one happens to travel. This is especially significant this year when sales of new products are lower than normal and can only be accounted for by the pleasant feel, attractive appearance and satisfactory performance which the suede garment provides. It cannot be stated that suede has supplanted in volume the perennially popular leatherette, but it does seem to be replacing the jersey double texture which has unwisely been reduced in quality for the false advantage of excessively low cost to the point of shoddiness. Suede cloth has been made increasingly better by all manufacturers during the few years of its existence and if this policy of continued improvement is maintained by the rubberizing industry there seems to be little reason for its not becoming as stable a product with the public as leatherette and the good trench cloth type garments.

Suede cloth is fundamentally a simple product in that it comprises a fabric spread with sufficient rubber to make it waterproof and surfaced with dyed cotton flock which is anchored to rubber coating with a further coating of rubber cement. While the elements appear simple enough, the actual manufacture process is far from easy. To begin with, the base film must have qualities that provide not only waterproofing but excellent aging. It may not be loaded heavily as maximum flexibility is essential and the cotton flock to be applied later tends to produce a stiffening effect which carried far enough will prove undesirable. The finished fabric must be soft and limp and by no means boardy. Furthermore, the more the flock is imbedded in the rubber, and this is highly important in providing surface anchorage and good wear resistance, the greater the tendency toward boardiness. We point this out to indicate the necessity for careful balancing of elementary conditions.

The cotton flock must be of the proper fiber length, for if it is too long it will not sift readily and will ball up in process or mat unevenly on the fabric. If the fiber is too short it will not imbed deeply enough to provide adequate wear resistance. The flock is applied in excess to the base coated fabric, usually by sifting, immediately after the application of a moderately heavy coat of rubber cement and while this cement is still wet. Some of the excess flock is removed by such action and beating during the drying period. After being well dried, the fabric is brushed to remove the balance of the flock and rolled to impel the fibers further into the rubber. One cannot discuss the flock angle of suede cloth without mentioning the obvious point that the dyes used in coloring it must be free of copper and manganese. It is so intimately in contact with the rubber that even very small quantities of these active oxidation accelerators are decidedly detrimental to the proper life of the product. The colored flock must also be non-bleeding, non-crocking, and as fast to light as possible.

A great deal of the suede cloth made to date has been sulfur chloride cured because of the ease of handling, but



Various Leather Grain Finishes

Upper left: Buffalo hide. Upper right: Pigskin. Lower left: Shark. Lower right: Caracul.

the tendency in cure is now definitely toward dry heat. The sulfur chloride cure has been fairly satisfactory but we do not believe the ultimate outstanding suede fabric will be cured in any way but dry heat. The all-important factor of aging can unquestionably be maintained on a higher level with a suitably compounded organic accelerator heat cure. Both types of cure require the festooning of the fabric in the curing oven so there is no difference in handling costs to favor either. The use of a good antioxidant of the phenyl-beta-naphthylamine type is recommended in spite of the discoloration it produces when exposed to light. The rubber surface is so completely covered by flock that not only is the light prevented from reaching the rubber easily but any discoloration that does form shows through to a very negligible extent. With regard to acceleration, the writer has felt that the use of the ultra type like piperidine pentamethylene dithiocarbamate which will provide a good air cure at low temperatures in a short time could be used to advantage. A cement containing this accelerator would have to be handled with great care in order to prevent premature setting up of the stock, but it would have the advantage due to its great activity of partially curing on the spreader and completely curing in the roll during its further passage through the manufacturing process, thus eliminating the need for festooning and further cure.

Accelerators Used

Another type of accelerator that should be of advantage is represented by di-pentamethylene thiuramtetrasulfide, known commercially as Tetrone A, which requires no added sulfur for vulcanization and which even without antioxidant gives the rubber excellent aging characteristics. Use of 1 per cent of Tetrone A plus 1.5 per cent tetramethylthiuram monosulfide without added sulfur is an extraordinarily good combination with regard to ease of handling and resistance to aging. With this type of acceleration, no free sulfur is present in the finished goods, for the sulfur required for vulcanization is provided in nascent form by the Tetrone A and at once combines with the rubber. Suede cloth made with this no-sulfur combination is more suitable than the usual sulfur cured type for use in novelties, linings for jewel boxes and silverware cases and for combining or back coating with pyroxylin. The accelerator in all cases should be one that operates safely with the varying temperatures of dry heat ovens and, of course, should leave in the suede cloth no unpleasant odor.

Good suede cloth must be first of all uniform in appearance, a condition that is one of the most difficult to maintain. Lack of uniformity due to streaks of uneven flocking, matted appearance, bare spots, etc., is probably the greatest cause of seconds. Among the service qualifications adequate anchorage of the surface flock is paramount with good aging of the rubber. If the flock does not adhere firmly it is soon rubbed off at the cuffs, underarms, pockets, and other points of contact, leaving unsightly bald patches. The lack of durability of suede cloth in this respect has been one of its most vulnerable points though marked improvement has been obtained through the intensive study and work of the rubberizers. The surface quality of suede is much improved by giving the finished material a water repellent treatment to prevent easy wetting. This not only makes the material shed water more easily but prevents the washing into the flock by rain the dirt and dust collected on it. If the surface will not wet, the dirt is washed off and is not left to dry in it as with an absorbent surface.

No mention of this product would be complete without reference to the very attractive effects produced in Doe-Tex suede cloth by embossing. The material grains readily and is available in many novel and striking designs. This embossed suede reminds one of tooled suede leather and is suitable for many novelty uses as well as for raincoats and sport garments. Embossing gives the added advantage of imbedding the flock, through the extra pressure applied, more firmly into the rubber. The color range provided is great enough to satisfy the most whimsical customer while the color shades so conform to the season's vogue that the most discriminating buyer will find what he wants.

New Hand Tachometer

A NEW portable tachometer for testing r. p. m. machine speeds has just been put out by the Amthor Testing Instrument Company, Inc., 309 Johnson St., Brooklyn, N. Y., and is their type #350, as illustrated. When applied to a rotating shaft, the pointer instantly points to the speed and follows every pick-up or slow down. When taken away, the pointer does not return to zero; it remains fixed at the last speed reading on the dial. With this fixed reading feature, it is not necessary to watch the dial and the tachometer may be used in the dark or in inaccessible places. It facilitates checking and testing speeds of motors, engines, blowers, centrifugals, shafts and belts.

The dial reads directly in r. p. m. but all "ft. per min." surface speeds can be measured. Each of the four speed ranges on the tachometer are read over the entire dial so that actually four times the graduation space is provided.

Cortex

A NEW material, a combination of cork and rubber, has been introduced in England, by the Atmo Rubber and Chemical Company, under the trade name "Cortex." By the combination of the two ingredients, certain advantages are claimed for the new product, which is not present when either is used alone. Cork, for instance, is incapable of being dyed, but in "Cortex" it is possible to introduce coloring matter in many degrees of fast shades and even marble effects, which makes the material particularly suitable for flooring and tiles.

Other uses for "Cortex" includes solings for shoes and slippers, mats and mattings, stair treads and pads of all kinds. The material can be easily sheeted and is therefore applicable for lapping pipes, joints, etc., and for jar rings where vessels are desired to be hermetically sealed. In the latter case there is the added advantage that there is nothing in the new "Cortex" material which would be detrimental to foods or drinks and in turn is unaffected by meat juices or vegetable acids, which may have to be subjected to very high temperatures during any sterilization process.

RUBBER GREASES*

RUBBER greases have applications in many fields where it is essential to maintain a high vacuum, such as, for example, in thermionic valve and lamp manufacture. Although the amount of grease required for such a purpose is not large, the standard of quality is extremely important, and users are naturally conservative in the materials employed, preferring to rely on a few types proved out by practical trial; metal and glass connections are involved, and are quite different to the jointing medium employed for lower vacuum.

A stop-cock grease for accurate high vacuum work must lubricate the ground surfaces smoothly and at the same time must not work out too quickly; it must also have a very low vapor pressure and be as free as possible from objectionable chemical or solvent action. Until comparatively recently reliance was placed upon fixed oils, such as neat's foot oil, which was mixed with lime or some suitable soap. Such preparations are quite unsuited to the purpose, since they tend to turn rancid, and in the latter condition have a marked corrosive action upon non-ferrous metals, particularly brass; another objection to such compounded greases is that the component parts eventually separate out to some extent, giving lack of homogeneity.

Efficiency of Rubber Greases

Today suitable greases usually consist of homogeneous mixtures of rubber in mineral oils or jellies, and the wide variation which is possible with the raw materials available make it possible to supply rubber greases to a consistency suitable for any purpose where a grease is employed. Formerly only limited success was met with in the use of rubber greases, because there was a tendency to use too little rubber, too low a temperature in processing the mixture, and too little time over the mixing, resulting in compositions lacking in uniformity. Naturally, variations are necessary according to the purpose of the grease, and the latter can be varied to suit:

(1) The temperature at which the grease will be used;
(2) The nature of the greased surfaces;
(3) The area of the surfaces to be covered;
(4) The uniformity and thickness of the gap between the surfaces;
(5) The provision of lubrication as well as sealing properties.

The grease must be supplied in a form which renders application an easy matter and allows free movement of parts where necessary when in operation; the grease must be very tenacious in its union to the surfaces to which it is applied, and must not thin down or thicken rapidly with slight variations in temperature. Obviously, absolute smoothness and freedom from grit is vitally essential, and there must not be the slightest tendency for any separation of the component parts or of any change whatsoever in the material either in use or under storage conditions. No chemical action of the grease on the surfaces to which it is applied can be tolerated, and obviously the presence of any volatile constituent will seriously interfere with the production of a low vacuum.

The choice of raw materials is a matter of importance, and a good quality pure raw rubber is the first essential. Pale crepe rubber is often employed, but smoked sheets are in some quarters held to give a better body to the mixture, and may be used either alone or in conjunction with crepe; the color in these cases is darker than when crepe alone is employed, and this is a minor disadvantage to the use of smoked sheets. The choice of grease or oil varies with the working conditions to be suited and the bearing pressure, but in all cases small viscosity changes over the working temperature range are essential. Mineral jellies which show a tendency to crystalline nature should be avoided and paraffin wax can be employed to increase the hardness if desired.

Practical Rubber Grease Compounds

Sheppard (*"I. & E. C.,"* 1927) gives the following as suitable compositions for the purposes indicated:

High Vacuum:	
Pale crepe	31
Petroleum jelly (white)	24
Paraffin wax (36° m.p.)	5
General:	
Pale crepe	6
Petroleum jelly	5
Paraffin wax	1
Light:	
Smoked or pale crepe	10
Petroleum jelly	18
Paraffin wax (30° m.p.)	1

He recommends that the mixtures are stirred continuously for 190 hours at 155° C. in preparation, the product being allowed to stand at least ten days before use. A good grease of the type given above will last twelve to eighteen months, but if a higher percentage of rubber is employed than that given for a high vacuum grease there is a tendency for gumming to take place. Attempts to use solvents were not satisfactory owing to the difficulty of securing complete removal.

In a more recent article (*"I. R. J.,"* November 21, 1931) two tables of suitable greases are given. Table 1 shows the characteristic constants of a number of petroleum products all of which are neutral and non-corrosive. Table 2 shows the composition of three mixtures; grease A is for general purposes up to 80-90° F.; above this temperature grease B is advocated; grease C should be reserved for small cocks where the two conditions of moving surfaces and very thin grease film call for attention.

Table 1
-Characteristics of Mineral Oils, Jellies and Waxes

Product.	Specific Gravity at 60° F.	Melting Point °F.	Viscosity, Redwood No. 1. Seconds at 70° F.	at 140° F.	at 180° F.	at 212° F.
A	0.880	132	...	...	...	...
B	0.885	140	...	...	...	...
C	0.890	151	...	...	...	...
D	....	108	...	135	60	28
E	....	148	...	...	138	40
F	0.910	...	245	54	42	38
G	0.935	...	1,587	147	78	36

A, B, and C are paraffin waxes, D and E are mineral jellies, F is a light lubricating mineral oil, and G is a machine (mineral oil).

*Reprinted with acknowledgment from *The Oil and Colour Trades Journal*, London, September 10, 1932.

Table 2

Rubber Greases

Percentage Composition

Constituent.	Grease A.	Grease B.	Grease C.
Rubber	8	15	15
Jelly D	60	..	..
Jelly E	..	85	..
Wax A	32	..	..
Oil G	..	..	85

See Table 1.

The writer of the above-mentioned article states that many users prefer to dissolve the rubber up in benzine (boiling range 120° F. to 250° F. approximately), and to add this to the hot jellies or oil, relying on thorough stirring to remove the volatiles. There are objections to this method, however, as regards the processing and also as regards the volatiles left in the finished product, and no difficulty should be met in dispersing the rubber satisfactorily if cut into small pieces and added to the oils at 300°-350° F. This writer states that a satisfactory grease of the type given above can be made in about four hours, using an iron pan with revolving mixing blades; the product is finally strained through 80-mesh gauze into storage containers.

Rubber's Resistance to Deterioration

IN the course of the Seventh Edgar Marburg Lecture, delivered before the American Society for Testing Materials, at its annual meeting at Atlantic City, N. J., June 22, 1932, Professor Hugh S. Taylor, head of the department of chemistry of Princeton University, brought out the following observations on resistance to deterioration in rubber, in a paper on the subject of the "Fundamentals in the Problem of Resistance to Deterioration." This annual lecture commemorates the name of the Society's first secretary-treasurer, who, through the development of technical programs over a period of sixteen years (1902-1918), brought wide recognition to the Society as a forum for the discussion of materials used in engineering fields.

An abstract of his introductory remarks and references made by Professor Taylor to the subject of rubber follows:

The problem of control in processes of deterioration is the problem of control of the speed of chemical reactions. The fundamental reactions in deterioration are oxidation processes involving oxygen, steam or other less universal oxidizing agents as well as reactions of polymerization, decomposition and depolymerization. Heat and light, ionization, pressure, and the presence of accelerating agents are the important factors which influence the speed of such processes and are thus of major importance in a discussion of the fundamentals of the problem. Control of deterioration is the inverse of the historical occupation of the chemist. Since alchemical times his prime concern has been the promotion of chemical reactions. A belated attention to the problem of preserving his synthetic achievements is not, however, without its own peculiar scientific interest and practical significance. . . .

The case of rubber is one in which conspicuous success has attended the application of the principles herein outlined. The aging of rubber, whereby it becomes hard and brittle, the development of cracks and loss of resistance to abrasion, the development, too, of stickiness in rubberized materials are all familiar phenomena. It is readily shown that the deterioration is due to the oxygen of the air, to light action or to both. The oxygen adds to the double bonds in the molecular structure and also promotes a decomposition of the rubber molecule, the latter continuing after the first is complete. The oxygen absorption curves are auto-accelerating in nature. During the course of the absorption the rubber first becomes tacky, then the tackiness disappears and it becomes weak. Finally it becomes hard and brittle. The tackiness occurs at 80° C. after absorbing only 0.02 to 0.05 mole of oxygen per $C_{10}H_{16}$ unit. After approximately 0.5 mole is absorbed the tackiness disappears and hardness and brittleness is reached after 1.0 mole is absorbed per $C_{10}H_{16}$ unit. The tensile strength shows a tremendous change as a result of oxygen absorption. Absorption of oxygen equal to 0.5 per cent decreases the tensile strength by nearly 50 per cent, the diminution in strength being directly proportional to oxygen absorption over the range 0 to 1 per cent.

It is significant that the oxygen absorption is dependent on the curing process. The rate of oxygen absorption for raw rubber is less than that for cured rubber and increases with the degree of cure, facts in agreement with observations on the natural aging of cured rubber. Over-curing increases the rate of absorption of oxygen. It is certain, however, that the effect of oxygen on rubbers of different degrees of cure is not the same in all cases; the system is complex. The oxygen absorption and also the aging qualities of rubber are profoundly modified by incorporating in the rubber small amounts of chemicals known as antioxidants, anti-agers or age-resistants. A wide variety of organic compounds is now in use for this purpose and has produced an important auxiliary chemical industry and a material improvement in the quality of rubber goods. Condensation products of aliphatic aldehydes and aromatic amines of various degrees of substitution are important members of this group of substances. It has been established that their influence is exercised on the rate of oxygen absorption; they materially reduce the rate of oxygen absorption, normally the more effectively the greater the concentration and dependent to a major degree on the constitution of the added inhibitor. They, therefore, behave analogously to the inhibitors of oxidation processes already discussed. The detailed interpretation of their action is naturally much more difficult than in the case of the simpler oxidizable compounds discussed in the theoretical portion of this work. There is evidence that raw rubber itself contains natural inhibitors of oxidation; hence the slow oxidation found with such material.[1]

As might be expected, deterioration is also sensitive to acceleration by catalysts and, as an example, the case of copper stearate may be cited. This substance is a vigorous accelerator of deterioration due to oxidation. Jones and Craig[2] show that antioxidants bring about a retardation of deterioration in the presence of the copper accelerator roughly in the order of their efficiencies in absence of copper, the actual rates of deterioration being much greater, however, when copper was present than when absent. The presence of copper did not change the type of curve obtained with varying amounts of the inhibitor phenyl-β-naphthylamine, which, in presence and absence of copper, did not markedly influence the rate of deterioration when present in concentrations beyond about 1 per cent inhibitor. The research shows that the catalyst and inhibitor each exercises its normal functions and that together they tend to neutralize the effect due to each. The possible catalytic effects of added materials is a matter of importance in the choice of pigments to be compounded with rubber.

Experience shows also the importance of light in this case. It undoubtedly speeds up the reactions involved.

[1]For literature survey and oxygen absorption studies, see Kohman, *Journal of Physical Chemistry*, Vol. 33, p. 226 (1929); *Rubber Chemist and Technician*, Vol. 2, p. 390 (1929).

[2]Jones and Craig, *Industrial and Engineering Chemistry*, Vol. 23, p 23 (1931).

New Zinc Oxide Filler

THE I. G. Farbenindustrie Aktiengesellschaft, Frankfurt-on-Main, Germany, have announced a new active filler, "Zinc Oxide Active," with no coloring power. As an easily soluble zinc oxide it is applicable for transparent or semi-transparent rubber goods of all types. As an anti-softener it can be used in mixing which tend to deform easily and especially for hot air cures.

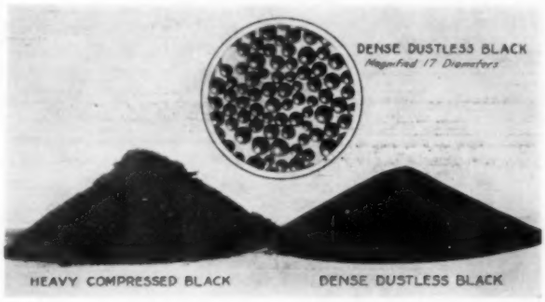
It is also claimed to improve resistance to fatigue in rubber, especially in addition to inactive zinc oxides or blacks, when specially good mechanical properties are required. Its application also extends to white or light colored stocks, as a reinforcing pigment, to improve resistance to tear, abrasion and hardness.

"Dustless" Carbon Black

GODFREY L. CABOT, INC., Boston, Mass., is offering to the rubber trade a new form of compressed carbon black under the temporary designation of "Dense Dustless Black."

The novelty of this material is its state of agglomeration, which, it is claimed, results in actual dustlessness. The black, itself, is produced in the customary way, no change being made in the method of burning the gas, the adjustment of the controlled ventilation to the burning buildings, or in any other part of the manufacturing process until after the black has entered the packing house and the grit has been separated from it.

The procedure from this point on is a departure from previous practice. By purely mechanical treatment, and without adding any other material to the black, the apparent density is increased from 4 pounds per cubic foot to approximately 30 pounds per cubic foot and all of the fine flocculent particles are compacted together into small spheres, free from dust. The dust of carbon black has always been considered a necessary evil, although, during



the past 30 years, manufacturers have succeeded in reducing the amount somewhat.

Since about 1900, the standard method of packing carbon black has been to collect several tons in a tank, agitate gently with rotating blades, to remove part of the entrained air, and then, by means of screw packers, force into paper bags.

Carbon black so packed is, by its nature, extremely dirty and dusty to handle. The density of the resulting package is from 12 to 15 pounds per cubic foot, or about 87 per cent air, the specific gravity of the black being about 1.8. Any greater degree of agglomeration increased the difficulty of dispersion in ink and varnish and, since the ink and varnish industries were the principal consumers of carbon black until 1915, little effort was made to decrease the dust nuisance.

With the discovery, in 1915, of the value of carbon black to rubber manufacturers, the dustiness became a major problem because rubber manufacturers, unlike ink manufacturers, were not accustomed to a pall of black smoke in their works. However, it was soon discovered that, although a density higher than 15 pounds per cubic foot impeded the dispersion of black in the comparatively low viscosity oils used in ink and varnish, the high viscosity of rubber and the tremendous shearing action of a rubber mill permitted a much higher density. This higher density was obtained by compressing or briquetting the black in powerful hydraulic or toggle presses and was first done by the rubber manufacturers themselves, who briquetted the uncompressed sacks, which they received from the black manufacturers, before opening them onto their rubber mills.

Naturally, this compression was soon transferred from the consumers to the manufacturers and, before long, a second degree of compression was added to give a still higher density. The resulting "double compressed" or "heavy compressed" package is the standard of the carbon black industry today, since about 70 per cent of the total shipments are made in this form. However, even when carbon black is so compressed, it creates a dust nuisance, which can be eliminated only partially, by ventilating and dust collecting systems.

Cabot's "Dense Dustless Black" is claimed to reduce this dusting to an insignificant amount. Instead of the customary process of agitating, packing and compressing, Cabot process transforms the very light, flocculent product of the burning buildings, having an apparent density of 4 pounds per cubic foot, directly into millions of tiny spheres, so compact, uniform and geometrically perfect that they are not only dustless, but they flow almost like water and can be poured into bags as simply as sand or sugar.

The spheres of "Dense Dustless Black" are firmly agglomerated and compacted and do not abrade or break down with ordinary handling, consequently, shipments are said to arrive at destinations in the same dustless condition as when first packed. These minute balls, however, disintegrate very readily when subjected to shearing forces, as a result of which they disperse readily when milled. This can be demonstrated by pressing a few of the spheres between finger and thumb. Direct pressing leaves the spheres unchanged, but rubbing between the fingers immediately reduces them to ordinary fine, dusty carbon black.

Although Godfrey L. Cabot, Inc., has been working on this new form of compression for the past year, the commercial product has been on the market for only the past few weeks.

Roll Engraving Machine

A NEW roll engraving machine (Model No. 3-R), has been recently developed by George Gorton Machine Company, Racine, for cutting, lettering and designs, either sunk or in relief, on rubber, brass, copper and steel printing and embossing rolls in all sizes from the smallest diameter and shortest face desired up to a maximum of 30 inches diameter by 12½ foot face. This machine is also furnished with shorter base for handling rolls up to 30 inches diameter by 8 foot face. While the machine has been developed for large heavy rolls, small rolls can be handled with equal facility and no loss of time on either set-up or engraving.

Any type of lettering or designs can be cut on this machine, which operates in exactly the same manner as other

Roll Engraving Machine

Gorton Pantograph machines for die-cutting, engraving and high speed profiling. The operator traces the lines of a brass template or pattern made several times larger than the design to be cut on roll. This guides the pantograph reducing mechanism which controls the cutter path, and reduces any error of copy in proportion to the reduction employed.

Usually one pattern or template is made for each roll and this pattern repeated by indexing roll and then moving the head supporting the cutter, pantograph, etc., lengthwise along base until the entire surface of roll is covered.

EDITORIAL COMMENT

Comparative Values

A MAN who buys crude rubber in the New York market this year gets for his dollar almost nine times the quantity of rubber that he could have bought with the same dollar in 1923. But the seller of the rubber receives only 11 cents as compared with one dollar in 1923. This is one example of the dual relationship of the purchasing power of the dollar and commodity prices as applied to the buyer and the seller in the wholesale market, which is graphically shown in a unique chart just issued by the National Industrial Conference Board in its series of Road Maps of Industry.

While rubber is the extreme case in the list of falling wholesale prices between 1923 and 1932, the Conference Board chart shows the changes in twenty other commodities.

Next to rubber, silk and cotton show the greatest decline in price. In 1929 the purchaser of silk received 64 per cent more goods for each dollar than in 1923; in 1932 the price had fallen still further, and the purchaser received over five times the amount of goods for the same amount of money that he would have received in 1923. In 1929 the seller of silk got 61 cents as compared with a dollar in 1923, and in 1932 he got only 19 cents. The relative proportions of purchases and sales of cotton for the same three years were less extreme than those for silk.

Encouragement to Small Factories

ENCOURAGEMENT often comes from recounting the story of similar struggles and the overcoming of difficulties. Such stories are particularly pertinent today to the rubber manufacturer, who has his multiple difficulties. These recollections constitute the human interest stories of the rubber industry. One of these stories comes from A. L. Murray, president of the Aubuan Rubber Corporation. His remarks, as published in *Business Administration*, October, 1923, and quoted below, tell a most interesting story.

"We started making blow-out patches and reliners for tires (both patented articles) 'way back in 1910—and on a shoe string. Quickly this grew into a yearly business of about $350,000.00 on these two items, simply by leading the market on them and by effective advertising. This, of course, was in the hey-day of the early tire business, and the liberal profits enabled us to graduate into inner-tubes (in which again we made our tubes with special individual features) and from this quickly on into manufacturing tires. The blow-out patch and reliner business was then discarded, because the quality of tires had practically destroyed their market.

"In tires, being a small company, we naturally had to lead in some feature and chose that of the extra-quality, extra-ply proposition, the goods naturally being marketed through the jobbers with whom we were established all over the country.

"Then along about 1920 (if I remember right) came a nice little body blow that apparently knocked our 'tire business through jobbers' into a cocked hat. The big companies set a new schedule of lowered prices to consumer, small margins to the dealer, and practically no profit to the jobber—which made a stone wall to the jobbing business from the small-factory standpoint.

"Frankly, we decided it was time to quit, but having considerable material bought ahead, we worked out a plan of concentrating our business direct to the dealers mostly within a hundred-mile radius of the factory. Never forgetting 'Old John Consumer,' we gave him an extra good article and a distinctly lower price and appealed to the dealer through the volume he could do, rather than on any extra margin. We did not think we could come out on it, but it took hold so strongly that our direct sales within this close factory radius the first year were over a million dollars, and the income tax we had occasion to pay out at that period was sizable.

"It lasted and made a fine, profitable business for a little over four years, but gradually conditions for the small tire factory became harder and harder until, as you know, practically all of them were eliminated.

"Margins are close, of course, for any volume proposition today attracts a host of extremely keen competitors, some of whom always think they can capture the market and take away the other fellow's trade by simply underquoting. If the competitive product is of approximately equal quality, there is no question but that you must find ways to meet the price or lose your largest accounts. If the product is distinctly inferior, we prefer to let the other fellow get his share of the business and to be content with that larger share we find goes to the better article when it is priced reasonably close to the poorer."

The RUBBER AGE

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The Rubber Industry's CURRENT NEWS

Financial—Personals—New Rubber Products—
Building Operations—Manufacturing—Exports

N. S. P. A. AND M. E. M. A. HOLD JOINT SHOW

Assurance of a large and representative jobber attendance at the Third Joint Trade Show of the Motor and Equipment Manufacturers' Association and the National Standard Parts Association, to be held in Detroit, December 5 to 10, is seen in the brisk demand for admission credentials being received by A. B. Coffman, joint show manager.

Officials of the sponsoring associations are optimistic over the interest being shown by the wholesalers. Improved business prospects for 1933 plus a desire to study the many new products which will be introduced at the show are believed to be important reasons for the jobber interest.

The central location of Detroit, which is easy to reach from all points in the United States and Canada, and the opportunities to visit many of the better known automotive plants are also factors which are expected to stimulate attendance.

The show will be open only to N. S. P. A. and M. E. M. A. jobbers on December 5 and 6 but throughout the rest of the week invited non-member jobbers will attend. Dealers and repair men in the Detroit area will attend on Friday night and Saturday morning.

Moves Molding Division

The General Electric Company has announced removal of the hot molding division of its plastics department from Meriden, Conn., to Pittsfield, Mass., with the cold molding section remaining in Meriden. Sales offices of the plastics department are being moved to the Lynn, Mass., plant, and the administrative offices to Pittsfield. Roy E. Coleman, manager of the plastics department, which has maintained its national headquarters in Meriden since July, 1931, is also being transferred to Pittsfield.

Under the department's control are six plants in five different states, and it is said to be the only plastics organization which handles all types of plastic products. The molded products plant in Meriden was taken over by General Electric from the Monowatt Corporation early in 1931 when the Monowatt business was moved from Meriden to Bridgeport.

In addition to the plants in Meriden, Pittsfield and Lynn, the plastics department controls units in Schenectady, N. Y., Erie, Pa., and Fort Wayne, Ind. Manager Coleman was connected with the Connecticut Telephone and Electric Company Meriden, for many years. When the Connecticut Molded Products Company was formed in 1927, he became its president, and upon consolidation of that company with the Monowatt Corporation, was chosen a vice-president of Monowatt, remaining with the business after it was taken over by General Elecrtic last year.

New York Rubber Group Xmas Party

Hold the evening of December 14 open. The New York Group, Rubber Division, A. C. S., will hold its annual Christmas party at the usual place, the club rooms of the Building Trade Employers' Association, 2 Park Avenue, New York City, on that date. Besides the delightful dinner and the customary drawing of Christmas presents, two papers will be presented, one by W. J. R. Hauser, of Revertex Corporation of America, on "Impregnation of Textiles with Latex" and the other by B. T. Bush, of Bushfield, Inc., on "Aromatics and the Rubber Industry." You will have a very enjoyable evening. Dinner is at 6:30 P. M. Tickets will be $2.00. Reservations can be made through the secretary of the Group, Peter P. Pinto, 250 West 57th Street, New York, N. Y.

Bus Tire Tax Ruling

An informal ruling by the Treasury Department regarding application of the excise tax on tires and tubes has been referred to the general counsel of the Internal Revenue Department for further consideration. The original ruling concerned taxation of tires which were furnished bus operators under tire mileage contract with rubber manufacturers. The Department had ruled that such tires would be considered in the use of the manufacturer and accordingly the tax would be collected from the manufacturer and not through the manufacturer from the bus operator.

Rubber Division Officers

As a result of the ballot taken by mail by the members of the Rubber Division, American Chemical Society, following the nominations at the Denver meeting of the Division, August 23 and 24, the following officers were elected for the ensuing year: Dr. L. B. Sebrell, chairman; Ira Williams, vice-chairman; C. W. Christensen, sergeant-at-arms; H. E. Simmons, secretary-treasurer. The executive committee was chosen as follows: E. R. Bridgwater, E. B. Curtis, L. C. Peterson, A. F. Pond and F. W. Stavely.

GOODYEAR MOVES FABRIC MILL MACHINERY SOUTH

The Goodyear Tire and Rubber Company has started removal of machinery from the Goodyear Cotton Mills in Killingly, Conn., to one of its plants in the South. The plant, which during the 20 years of its operation by Goodyear, employed about 600 men in the manufacture of tire fabric, has been closed since June. The original mill was built in 1827 by Caleb Williams of Providence, R. I., and produced cotton sheetings until 1912 when the Goodyear interests took it over. Acquisition of the property marked the first time that an American rubber company had expanded to include manufacture of cotton fabrics. Research work conducted by Goodyear in the mill resulted in the development and perfection of Supertwist. The section of Killingly in which the plant was located came to be known as Goodyear.

Victor Rubber Reports

A surplus of $191,577, representing the excess of assets over liabilities, was reported by LeVerne C. Sturgis, receiver for the Victor Rubber Corporation, Springfield, O., in his first report to the Clark County Common Pleas Court. Mr. Sturgis was appointed receiver in a suit brought by Mary Cugley against the corporation.

Total assets of the corporation were reported to be $377,313.68, divided as follows: Current assets, $51,206.49; fixed assets, $321,187.93; deferred charges, $4,794.26; and other assets of $125.

Liabilities were divided as follows: Current liabilities, $59,469.14; mortgage loan, $11,267.44; bank loan, secured by mortgage to guarantors, $15,000; preferred stock outstanding, $50,000, divided into 500 shares; and common stock, Class A shares, outstanding, $50,000, divided into 12,500 shares.

Firestone Pays Dividend

Payment of nearly three-quarter of a million dollars to Firestone Tire and Rubber Company stockholders was authorized November 2 when the directors declared the regular quarterly dividend on six per cent cumulative preferred stock, Series A.

The dividend will be paid December 1 to holders of record November 15, and it will be a $1.50 share on 476,581 shares, amounting to $714,872.

Directors pointed with pride to the dividend declaration, which continues an unbroken line of dividend payments throughout the depression.

RUBBER-TIRED TRACTORS OFFER NEW OUTLETS

Allis-Chalmers Manufacturing Company is introducing a new A-C model "U" air-tired farm tractor with a 2½, 3 1-3 and 5 miles an hour plowing speeds and a 15-mile an hour road speed, thereby converting the regular farm tractor into a general utility machine available for both field and highway operation.

Simultaneously Goodyear Tire and Rubber Company and Firestone Tire and Rubber Company have begun advertising their new farm tractor tires, both of which are of low

pressure (12 pounds). Extra speed, more cushioning, greater operating range and lower traction operation and maintenance costs are claimed.

Other leading farm equipment manufacturers are likewise considering the use of rubber tires as original equipment for tractors, as a stimulant to tractor sales.

There are at present approximately 1,000,000 strictly farm tractors in use, the great majority of which are of the wheel-type and therefore adaptable to rubber tires. Rubber tires can be placed on all sizes and makes of wheel tractors, although those now in use would require a new wheel in order to allow for proper fastening. New wheels of this type are now being offered by French and Hecht, of Davenport, Iowa, and Springfield, Ohio.

Sponge Rubber Products Co.

Net sales of the Sponge Rubber Products Company, operating plants in Derby and Shelton, Conn., amounted to $348,437 during the first six months of 1932 and net income before Federal taxes totalled $34,588, according to an analysis of the company's financial position prepared by R. Schuyler Goodwin, of the New Haven, Conn., investment house of Day, Stoddard & Williams, Inc.

The concern has shown its greatest gains during the current depression, Goodwin said, pointing out that net sales have jumped from $402,405 in 1929 to $501,805 in 1930, and $628,785 in 1931, while net income has increased from about $17,500 to nearly $50,000 per annum during the same period.

Started in 1923 by F. M. Daley, Lowell D. Smith and William R. Todd for the manufacture of sponge rubber balls under the trade name "Bonny Bouncer," the company has steadily expanded its scope until today it produces rubber upholstery parts and sponge rubber cushions for automobiles, bath mats, chair cushions, bath sponges, wall cleaners, garden mats, under-mats, hospital mats and die-cut or molded sponge rubber specialties.

Waste sponge rubber is now utilized as a filler for kitchen and garden furniture cushions, sold at low prices, and is also employed in the manufacture of toys and specialties. The company's latest development is the "Kreator Kit," a package of assorted pieces of colored sponge rubber, together with cement with which children can fashion their own sponge rubber toys.

A sponge rubber mat for use under carpets and rugs is now in process of development. This under cushion, it is claimed, will prolong life of rugs, prevent slipping and increase resiliency.

Tires for Wheelbarrows

Engineers of the B. F. Goodrich Company, Akron, Ohio, have recently designed low pressure pneumatic tires for wheelbarrows. The new tires, patterned after airplane casings, constitute one of the major changes made in wheelbarrow construction in many years.

With low pressure tire equipment it is possible to use wheelbarrows in mud and deep sand where the old type wheels found motion difficult if not impossible. Manual effort required to push a laden wheelbarrow is considerably reduced when low pressure tires are used.

Fire at Middletown

A storage room in the plant of the Goodyear Rubber Company, Middletown, Conn., manufacturing rubber footwear, was damaged by fire November 8. The blaze was caused by spontaneous combustion and proved troublesome to firemen because of fumes thrown off by burning lamp-black which was stored in the room. The amount of loss was not estimated, but is believed to be relatively slight.

New Rubber Company

Superior Latex Products Company is the name of a new concern proposing to manufacture rubber sundries, has been incorporated at Columbus, O., recently. The company is authorized to issue 250 no par shares of stock. S. L. Kramer, attorney, filed the incorporation application, and is one of the incorporators.

Raybestos-Manhattan Report

During the nine months ended September 30, 1932, Raybestos-Manhattan, Inc., incurred a net loss of $185,810.68, after all charges including $415,278.16 for depreciation. The directors declared a dividend of fifteen cents per share, payable December 15, 1932, to stockholders of record at the close of business November 30, 1932.

Tank Company Expands

The New England Tank and Tower Company, 42 Main Street, Everett, Mass., have recently made an addition to their factory. They are manufacturers of wooden tanks and have been suppliers, from time to time, to rubber manufacturers.

RUBBER DOLLS—THE XMAS TOY SENSATION

In connection with the toy trade for the Christmas season, rubber dolls of all kinds are being particularly featured. The new rubber body doll with moveable arms and legs of rubber is the season's outstanding hit in "Toydom."

Rubber dolls this year are being featured in combination sets, with layette and bathinette, including besides an attractive layout of baby clothes, all the accessories of the baby's bath, wash-cloth, soap, talcum powder, etc.

Among the manufacturers and wholesale toy dealers, who are stressing the rubber doll for Christmas sales, are the Horsman Corporation, 200 Fifth Avenue, New York City; American Character Doll Company, 20 East 17th Street, New York City; Alexander Doll Company, 20 West 22nd Street, New York City; Ideal Novelty and Toy Company, 273 Van Sinderen Avenue, Brooklyn, N. Y.; E. Goldberger, 307 Richardson Street, Brooklyn, N. Y.; and the EffanBee Doll Company, 45 Greene Street, New York City.

Fisk Steps Up Output

Fisk Rubber Company will start production of bicycle tires at its Chicopee, Mass., plant on December 1 next. Fisk officials announced they would move the machinery and equipment from the Cudahy, Wis., plant of the Federal Rubber Company, a Fisk subsidiary, to Chicopee Falls. According to present plans, the company hopes to build up a daily production schedule of 2,000 tires before January 1, 1933.

New Equipment Installed

New machinery for the production of insulated wire and allied products is being installed in the factory of the New York Insulated Wire Company, Wallingford, Conn., of which D. F. Davis and Ralph H. Mount recently became active heads. Much of the plant's equipment was found to be obsolete and this is being replaced. Resumption of complete operation is expected in the near future.

Care of Rubber Flooring

The Rubber Manufacturers' Association has recently issued a booklet covering the approved methods of maintenance and polishing of rubber floors which will receive wide distribution through the Association's membership in order to reach consumers and others interested in the proper maintenance of rubber floors and thereby assure longer life and more complete satisfaction.

Talks on Rubberizing

At the meeting of the New York Section of the American Association of Textile Chemists and Colorists, at the Chemists Club, November 18, W. J. R. Hauser, of the Revertex Corporation of America, spoke on the "Impregnation of Textiles with Latex." The paper was a comparison of the degree of penetration into textile fibers of latex compared with rubber cement.

Farrel Appoints Representative

Farrel-Birmingham Company, Inc., 344 Vulcan St., Buffalo, N. Y., has announced the appointment of E. J. von der Heide as sales representative to handle Farrel-Sykes gears, gear units and gear generators in the middle west territory.

Mr. von der Heide is a mechanical engineer, with a considerable background of experience in machine and gear design, supplemented by practical experience in shop management. He has developed what is claimed to be the most modern instrument for recording noises of all types, especially those produced by gear drives and has worked on the design of some of the most complicated gear drives used in modern machine tools.

Mr. von der Heide's headquarters are at 824 Miami Savings Bldg., Dayton, Ohio.

"Vulcalock" Talk

Description of how the field of rubber lining for tanks, pipe and other equipment had been greatly broadened by many industries during the last several years was given the Purchasing Agents' Association of Akron, Ohio, at the University Club, Tuesday night, Oct. 22, by Dr. H. E. Fritz, manager of chemical sales, the B. F. Goodrich Company.

Dr. Fritz' subject was "Various Applications of the Vulcalock Process." A talking picture showing the mining or iron ore and manufacture of steel into wire and other products was displayed by the American Steel and Wire Company.

Firestone Holds Conference

Factory executives of the Firestone Tire and Rubber Company were in conference November 3 at Firestone club and again on November 5, at which time Harvey S. Firestone, Sr., chairman of the board of directors, spoke to the gathering.

The executives and plant engineers discussed new methods of manufacture and other efficiency problems. Representatives were present from the Firestone plants in Hamilton, Ont., Los Angeles and Brentford, Eng. The visitors included: J. H. Forman, factory manager at Hamilton, Ont.; R. Broadbent, general foremen manager; L. Brooker, H. T. Humby, tire engineer, all from Canada; T. E. Pittenger and R. E. Craig, Los Angeles; F. A. Nicholas, Brentford, Eng., and J. M. Miller and A. C. Bain from Hudson, Mass.

Monsanto Adopts 5-Day Week

Monsanto Chemical Works and its domestic subsidiaries have adopted the five-day week. In announcing this move, Edgar M. Queeny, president of the company, said:

"In its adoption, Monsanto has been activated by the desire to give its employes all practical assurance of continued employment, thus assisting in the current vital problem of unemployment, and by the realization that a shorter working period is the logical concomitant of industry's increasing efficiency.

"It is our belief that in the sharing of available work among a larger number of men and women lies one of the remedies for existing difficulties."

Names in the News

H. E. VANPETTEN, advertising manager, mechanical goods, the B. F. Goodrich Company, addressed the Cincinnati Association of Industrial Marketers Friday night, Oct. 28th. His subject was "The Advertising Dollar and How It May Best Be Spent."

J. M. HOGAN, division foreman of the calendar rooms, the B. F. Goodrich Company, Akron, Ohio, recently spent a week at the plant of the Canadian Goodrich company at Kitchener, Ontario.

J. H. WOOD has recently been appointed Eastern sales manager of the Lake Erie Engineering Corporation, Buffalo, N. Y., builders of hydraulic machinery and power tool equipment. Mr. Wood, for a number of years, was works manager for the Camden Iron Works, of Camden, N. J. In 1913, he moved to Cleveland, Ohio, where he was general superintendent of the Kilby Manufacturing Company. In 1915, he returned to Philadelphia as works manager for the Southwark Foundry and Machine Company. From 1917 to 1925, Mr. Wood owned and operated the Eastern Machinery and Equipment Company, of Philadelphia. From 1925 to September of this year, he was sales engineer for the Baldwin Southwark Corporation, of Philadelphia. As Eastern sales manager for the Lake Erie Engineering Corporation, Mr. Wood will maintain an office at 104 Jefferson Avenue, Haddonfield, N. J.

J. H. WOOD

E. C. TIBBITTS, former advertising manager of the B. F. Goodrich Company, and former manager of the Akron branch of the Rankin advertising agency, has announced incorporation of a new advertising agency to be known as the E. C. Tibbitts Company. Mr. Tibbitts is to be president. Vice-president will be HUGH SINCLAIR, for the past six years with the Goodyear advertising department. C. W. FRANK, formerly with the *Akron Press*, will be art director. Offices are at 8 South Adolph avenue, Akron, O.

EARL S. SARGEANT, vice president and general manager, Canadian Goodrich Company, Ltd., Kitchener, Ontario, was in Akron the week of November 7th for conferences with company officials.

DR. WEBSTER N. JONES, former general superintendent of the processing division, the B. F. Goodrich Company and now head of the engineering department of the Carnegie Institute of Technology at Pittsburgh, visited his former associates at Goodrich, Tuesday, November 8th.

DR. M. GOODRICH, chairman of the board, the B. F. Goodrich Company, has been named a member of the National Foreign Trade Council by James A. Farrell, chairman, and Eugene P. Thomas, president. Mr. Goodrich is a son of the founder of the Goodrich company.

A. A. HUPFER was elected president of the newly-organized Goodrich Pistol and Rifle Club. FRANK ROGERS was named secretary; CHARLES WILLIAMS, treasurer; CLARENCE FLICKEISEN, range officer; and AMOS BROWN, assistant range officer. The club, composed of B. F. Goodrich Company employees, will build an indoor range for winter shooting and plans outdoor matches as a later development of the organization's activities.

C. W. BEDFORD, manager of tire research, the B. F. Goodrich Company, is chairman of the program committee for the 13th national convention of the Rubber City Stamp Club to be held in Akron, December 3-4, at the Mayflower Hotel. The local organization is the largest of its kind in this country and more than 1500 collectors will attend the two-day sessions. This is the fourth year the meetings will be held in Akron.

G. L. MATTHIAS, general superintendent of the mechanical goods division, the B. F. Goodrich Company, and Mrs. Mathias returned home Monday, October 31, after a two-weeks hunting trip which took them far into Canada. They camped on the LaRatt river, 250 miles north of Montreal and brought down a large quantity of small game, including ducks and partridge.

R. M. MOODY, stationed for more than two years at Yokohama, Japan, as production engineer of the Yokohama Rubber Company, Ltd., Japanese subsidiary of the B. F. Goodrich Company, has returned to the Akron offices of Goodrich. Mr. Moody, with his wife and little daughter, Beverly Louise, went to Yokohama in June, 1930. When they returned, Jean Carol, 10 months old, born in Japan, had her first glimpse of America. Beverly Louise is now 3½ years old.

D. W. JOHNSON went to Yokohama several months ago to take Moody's place there and allow him to return to Akron general offices.

New Tractor Tire

Development of another new tire for tractor service, a pneumatic companion to the "Zero Pressure," is announced by the B. F. Goodrich Company, Akron, Ohio. Known as the "Tractor-Grader" tire, the new Goodrich product is of the lug-type, built for road service, constructed for hard knocks and severe driving torque.

Tractor service demands a tire carcass of unusual strength. The severe action of driving torque was given particular attention in the design of carcass for the Tractor-Grader tire. It is insulated with heavy gum coatings between each cord ply to eliminate the possibilities of bruises in severe service.

The specially compounded, very thick tread resists the abrasion and cutting of sharp stones common to tractor service. Special consideration was given to the destructive qualities of road oils and tar, resulting in a tread compounded to do an outstanding job in building and maintaining tar-bound roads.

Rubber-Covered Tire Valves

Rubber-covered valves for automobile tire tubes are among the newest contributions of Goodyear Tire & Rubber Company engineers to the field of tire improvements.

Advantages of the rubber covered valves claimed are that they are vulcanized to the tube and employ no locknut to work loose or start air leakage around the base of the valve as is encountered with the clamped-in metal valve and in case of puncture the rubber valve will slip back into the tire without tearing the tube which is not true in the case of metal valves with rim nuts.

Standard metal valve insides are used in the construction of the new rubber covered tube valve. The valve is an integral of the tube. It fits into the rim hole under compression providing a watertight seal against entrance of dirt and water to the inside of the tire.

While primarily developed for use on drop center rims in use on most cars of recent manufacture, the new rubber covered valve tubes can also be used on many types of flat base rims.

Van Cleef Holds Conference

On December 10, through the 15th, the sales executives and field men of Van Cleef Brothers, Chicago, will hold their yearly conference. During this time they will discuss sales policies and products, as effected by current conditions. They are the manufacturers of the well-known line of "Dutch Brand" rubber and chemical products.

Charles A. Peale

Charles A. Peale, superintendent of the Fabric Fire Hose Company, Sandy Hook, Conn., manufacturers of rubber lined cotton, fire and mill hose, for the past 30 years, died November 10 at his home in the small southwestern Connecticut community. His death was sudden, following attacks of acute indigestion. He came to Sandy Hook when his company moved there from Warwick, N. Y., in 1902. He was 63 years of age and is survived by his wife, two daughters, a brother and a sister.

Charles W. H. Cochrane

Charles Walter Hamilton Cochrane, agent of the Malayan Information Agency, London, and chief secretary to the Government of the Federated Malay States, has died recently in London, at the age of 57. He was the fourth son of the late Rev. D. C. Cochrane, and a graduate of Oxford University. He entered into the F. M. S. Civil Service in 1899. In 1921 he became under-secretary to the F. M. S. Government, and was later political adviser in Johore and British Resident in Pahang and Perak. He was appointed chief secretary in 1930, in which year he was made a C.M.G.

Mr. Cochrane had an intimate knowledge of the rubber industry in Malaya and a very large part of his official work in London was concerned with furthering the industry's prosperity.

Rubber Boots for Airplanes

Rubber boots for airplanes are the latest products of aeronautical ingenuity. The "boots," in this case, are being installed on the night mail planes of Transcontinental and Western Air and will serve to remove ice formations on wings during the coming winter.

Developed for aeronautical use by the B. F. Goodrich Company, Akron, Ohio, the "de-icers" are attached to the leading edges of wings and tail surfaces, and can be inflated and deflated rapidly by means of compressed air. The pulsations prevent the ice formations.

Installation of de-icers, together with the increased proficiency of pilots in flying by instrument and by means of radio directional beacon, is expected to bring about the best winter performance in scheduled operation ever recorded, according to officials of the air line.

Rubber Stock Quotations

	Last Price		—1932—	
	Nov. 18	Nov. 1	High	Low
Aetna	1¾	2	3	1⅛
American Hard Rubber	—	—	—	—
Faultless	22	22	25	12
Firestone	11⅛	12	18½	10¾
do. 6% pfd.	61½	55½	68	45½
Fisk	⅜	⅝	¾	⅛
do. 1st pfd.	½	—	2⅝	¼
General	29	29	45	25
do. pfd.	—	40	—	—
Goodrich	5⅝	5⅛	12⅜	2¼
do. pfd.	18½	—	33	7
Goodyear	16¼	14⅛	29¾	5½
do. 1st pfd.	40	40	69½	19¾
India	4½	—	7	½
Kelly Springfield	1	1¼	2⅞	½
8% certfs. pfd.	15⅛	1	24	7
Lee	5½	5	7⅞	2
Mohawk	2	2½	4	1
do. pfd.	20	20	—	—
Norwalk	1¼	—	2½	⅝
Pirelli	29⅝	—	31⅞	21
Raybestos-Manhattan	7¼	7½	12¾	4⅞
Seiberling	2⅝	2½	4½	1
do. pfd.	14¾	21	22	7
Thermoid	2	1¾	4	⅜
U. S. Rubber	5¼	4⅝	10¼	1¼
do. pfd.	9⅛	8	20¾	3⅜

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LATE MARKET PRICES

RUBBER—COTTONS AND FABRICS—CHEMICALS

NEW YORK, NOVEMBER 21, 1932

Crude Rubber

THERE has been scarcely any perceptible change in the price levels for the various grades of crude rubber during the past fortnight. Spot smoked sheet has remained fairly firm around 3½ cents. With the publication of the disappointing consumption figures for October and the continued curtailment in production schedules by the tire companies, there can be little encouragement in the market. Moreover, the stocks on hand and afloat still continue to mount up to a point where the statistical position of the commodity is hopelessly top-heavy. Under the circumstances any rise in price would be phenominal. Domestic consumption of rubber during October was the lowest since 1923. Operations on the Rubber Exchange have fallen to a point of extreme dullness. Without some unforeseen factor injected into the situation, no change can be expected in price levels until there is a drastic readjustment in the commodity's statistical position. Late prices follow:

Plantations—			
Ribbed Smoked Sheets—			
Spot-Nov.	—	@	.03 7/16
Dec.	—	@	.03 7/16
Jan.-Mar.	—	@	.03 9/16
First Latex, crepe spot	—	@	.03 15/16
Amber Crepe, No. 2	—	@	.03 3/16
Amber Crepe, No. 3	—	@	.03⅛
Amber Crepe, No. 4	—	@	.03
Brown Crepe, Clean thin	—	@	.03 1/16
Brwon Crepe, rolled	—	@	.02 13/16
Latex—			
Liquid Latex, per gal.	.70	@	.75
Paras—			
Up-river, fine	.07	@	.07½
Up-river, coarse	Nominal		
Acre, Bolivian, fine	.07½	@	.07¾
Caucho Ball, Upper	—	@	.03
Centrals—			
Central scrap	.04	@	—
Esmeraldas	.04	@	—
Balata—			
Block, Ciudad	—	@	.18

LONDON MARKET

Standard Ribbed Smoked Sheets—Buyers

Nov.	2 7/16	@	2 15/32d
Dec.	2 15/32	@	2½d
Jan.-Mar.	2 17/32	@	2 9/16d

SINGAPORE MARKET

Standard Ribbed Smoked Sheets—Sellers

Spot	—	@	2d

Reclaimed Rubber

While there has been a drop in rubber consumption, reclaimed rubber continued to hold its place in compounding, despite an even higher price than crude. In the face of a sustained low range of price for crude rubber, reclaimed has maintained its position and actually increased its demand over the last two months. No changes in prices for the leading grades of reclaimed have been reported during the past fortnight. Prices remain as follows:

High Tensile				
High Tensile Red	lb.	.04¾	@	.05
Super-Reclaim Black	lb.	.05	@	.05¼
Shoe				
Washed	lb.	.05½	@	.05¾
Tube				
No. 1 (Floating)	lb.	—	@	.06½
No. 2 (Compounded)	lb.	.04½	@	.04¾
Tires				
Black	lb.	.03¾	@	.04
Black, selected tires	lb.	.04	@	.04¼
Dark Gray		.05	@	.05¼
Light Gray	lb.	.05½	@	.06
White	lb.	.05½	@	.05¾
Truck, Heavy Gravity	lb.	.05	@	.05¼
Truck, Light Gravity	lb.	.05¼	@	.05½
Miscellaneous				
Mechanical blends	lb.	.03	@	.03½

Scrap Rubber

A few slight reductions can be noted in scrap rubber prices over the last two weeks, but the market remains dull and little business has been done, even at the present attractive low prices. It is reported that accumulations of scrap are better and junk dealers are again beginning to make collections. Lowered rail freight rates in various sections are helping the dealer. Latest prices for standard grades of rubber scrap are quoted as follows:

(Prices to Consumer)

Auto tire peelings	ton	15.00	@17.00
Mixed auto	ton	6.50	@ 7.50
Clean solid truck tires	ton	24.00	@27.50
Boots and shoes	ton	15.00	@17.50
Arctics, untrimmed	ton	10.00	@12.50
Inner tubes, No. 1	lb.	.02	@ .02¼
Inner tubes, No. 2, compounded	lb.	.01¾	@ .01½
Inner Tubes, Red	lb.	.01¾	@ .01½
Air Brake Hose	ton	7.00	@ 8.00
Rubber Hose	ton	6.00	@ 7.00

Cotton

RAW cotton prices showed a slight increase over the last two weeks but still remained at extremely low levels. Reports would indicate that the recent spurt of the textile industry has been held up by slow demand and with the stocks of cotton still on hand with the new crop virtually "on the horizon," the prospects for an early recovery in price levels are not promising. The bright spot in the situation is the export trade which is holding up in encouraging volume.

High, low and closing prices on the New York Cotton Exchange as of November 18, were as follows:

	High	Low	Nov. 18 Close	Nov. 3 Close
Nov.	—	—	6.25	5.92
Dec.	6.36	6.27	6.28	6.00
Jan.	6.40	6.34	6.34	6.04

Tire Fabrics

With the reduced production schedules prevailing in tire factories the market for tire fabrics continued extremely dull and buying is only in small lots. No change has been recorded from the already low prices prevailing for the more popular grades. Last recorded prices follow:

(Prices Net at the Mill)

CORD				
Peeler, carded, 23/4/3	lb.	.22	@	.22½
Peeler, carded, 23/5/3	lb.	.21	@	.21¼
Peeler, carded, 13/3/3	lb.	.18	@	.18¼
Peeler, carded, 15/3/3	lb.	.19	@	.19¼
Egyptian, carded, 23/5/3	lb.	.34½	@	.35
Egyptian, combed, 23/5/3	lb.	.39½	@	.40
CHAFERS				
Carded, American, 8 oz.	lb.	.18	@	.18½
Carded, American, 10 oz.	lb.	.18	@	.18½
Carded, American, 12 oz.	lb.	.18	@	.18½
Carded, American, 14 oz.	lb.	.17⅛	@	.18
LENO BREAKER				
Carded, American, 8¼ oz.	lb.	.18	@	.21
Carded, American, 10¼ oz.	lb.	.18	@	.21
SQUARE WOVEN				
Carded, American, 17¼ oz. 23-11 ply	lb.	.21	@	.21¼
Carded, American, 17¼ oz. 10-5 ply	lb.	.17	@	.17½

Sheetings

Sheetings declined in price slightly in sympathy with the lower prices for raw cotton, but even at the present attractive low levels trade was reported to be dull and orders were for small quantities. Declines of a ¼ cent were reported for most of the constructions. The latest quotations for sheetings grades used in the rubber industry follow:

40 inch, 2.50 yard	yd.	—	@	.05¾
40 inch, 2.85 yard	yd.	—	@	.05¼
40 inch, 3.15 yard	yd.	—	@	.05¼
40 inch, 3.60 yard	yd.	—	@	.04½
40 inch, 3.75 yard	yd.	—	@	.03¾
40 inch, 4.25 yard	yd.	.03¾	@	.03½

Ducks

Enameling	lb.	.20	@	.22
Belting and Hose	lb.	.22	@	.23
Single filling	lb.	.08	@	.08½
Double filling	lb.	—	@	.10

Closing Prices on Rubber Exchange of New York, Inc.

No 1 Standard Contract of 10 Tons*

FROM NOVEMBER 4 TO NOVEMBER 19, 1932

Date	Spot	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	Sales
Nov. 4	3.43	3.36	3.39	3.45	3.51	3.57	3.60	12
5	3.45	3.39	3.42	3.48	3.54	3.60	3.62	18
7	3.54	3.48	3.51	3.58	3 64	3.71	3.76	59
9	3.42	3.36	3.39	3.45	3.51	3.57	3.61	25
10	3.47	3.43	3 45	3.51	3.56	3.62	3.66	54
11	3.53	3.48	3.50	3.54	3.61	3.69	3.72	6
12	3.54	3.46	3.46	3.56	3.62	3.68	3.72	40
14	3.45	3.41	3.41	3.48	3.55	3.62	3 65	7
15	3.45	3.41	3.42	3.48	3.55	3.62	3.66	80
16	3.41	3.38	3 38	3.44	3.50	3.56	3.60	91
17	3.37	3.33	3.33	3.39	3.45	3.51	3.54	39
18	3.34	3.30	3.30	3.37	3 44	3.51	3.54	102
19	3.37	3.32	3.32	3.39	3.45	3.52	3.55	25

*This contract will be superseded by "No. 1 B Standard" on April 1, 1933

CHEMICALS

PRICES in the rubber chemical market have remained unchanged during the past fortnight. Buying interest is still dull and only small orders predominate. In view of changing conditions in the industry there is a tendency on the part of chemical manufacturers to reduce the number of their offerings to only the more popular lines. As a consequence a number of accelerators have been eliminated from the market and several other minor rubber compounding materials. Late quotations on standard products follow:

ACCELERATORS

Organic				
A-1	lb.	.24	@	.27
A-5-10	lb.	.33	@	.36
A-7	lb.	.55	@	.59
A-11	lb.	.62	@	.66
A-16	lb.	.57	@	.61
A-19	lb.	.58	@	.62
A-20	lb.	.84	@	.88
A-32	lb.	.80	@	.95
Aldehyde ammonia, crystals	lb.	.65	@	.67
Altax	lb.			
Captax	lb			
Crylene	lb.	.55	@	.65
paste	lb.	.45	@	.55
Di-Ortho-Tolyguanidine	lb.	.42	@	.43
Diphenylguanidine	lb.	.33	@	.34
Ethylidene aniline	lb.	.45	@	.47½
Formaldehyde aniline	lb.	.37½	@	.42
Heptene	lb.	.40	@	—
Hexamethylene-tetramine	lb.	.46	@	.47
Lithex	lb.	.18	@	.20
Methylenedianiline	lb.	.37½	@	.40
Monex	lb.	3.25	@	—
Oxynone	lb.	.68	@	.80
Phenex	lb.	.50	@	.55
R & H 40	lb.	.40	@	.41
R & H 50	lb.	.40	@	.41
R-2	lb.	1.95	@	2.15
Safex	lb.	1.20	@	1.25
SPDX	lb.	.75	@	—
Super-Sulphur No. 1	lb.			
No. 2	lb.			
Thiocarbanilid, drums	lb.	.25	@	.27
Trimene	lb.	.75	@	—
base	lb.	1.20	@	—
Triphenylguanidine	lb.	.58	@	.60
Tuads	lb.			
Ureka	lb.	.75	@	1.00
Vulcanex	lb.			
Vulcone	lb.			
Vulcanol	lb.			
Z-88-P	lb.	.50	@	.60
Zimate	lb.			
Inorganic				
Litharge, domestic	lb.	.05¾	@	—
Magnesia, calcined,				
light	per 100 lb.	5.35	@	5.45
heavy	per 100 lb.	3.65	@	3.75

COLORS

Blacks (See Compounding Materials)

Blues				
Prussian	lb.	.36	@	.37
Ultramarine	lb.	.06	@	.30
Browns				
Sienna, Italian	lb.	.04	@	.08
Umber, Turkey	lb.	.04	@	.06
Greens				
Chrome, light	lb.	.23	@	.26
medium	lb.	.26	@	.28
dark	lb.	.28	@	.33
Chromium Oxide, bbl.	lb.	.23	@	.27
Reds				
Antimony				
crimson, 15/7	lb.	.40	@	—
sulfur, free	lb.	.52	@	.56
Indian English	lb.	.09	@	.10
Domestic (Maroon)	lb.	.11	@	—
Red oxide, pure	lb.	.10	@	.12
Rub-Er-Red, f.o.b. Easton	lb.	.03¾	@	—
Whites				
Lithopone, Albalith	lb.	.04½	@	.04¾
Lithopone, Azolith	lb.	.04½	@	.04¾
Titanium oxide	lb.	.17	@	.19
Titanox B	lb.	.06	@	.06½
Titanox C	lb.	.06	@	.06½
Zinc Oxide—American Process				
American Azo:				
ZZZ (lead free)	lb.	.05¾	@	.06
ZZ (leaded)	lb.	.05½	@	.05¾
Horsehead Lead Free Brand:				
Selected	lb.	.05¾	@	.06
Special	lb.	.05¾	@	.06
XX Red	lb.	.05¾	@	.06
XX	lb.	.05¾	@	.06
XX Green	lb.	.05¾	@	.06
Leaded Brand, Standard	lb.	.05½	@	.05¾
Sterling	lb.	.05½	@	.05¾
Superior	lb.	.05½	@	.05¾
Lehigh	lb.	.05¼	@	.05½
U. S. P., bbls.	lb.	—	@	.12¾
Kadox, black label	lb.	.09⅝	@	.09⅞
Blue label	lb.	.08⅝	@	.08⅞
Red label	lb.	.07¼	@	.07½
Cryptone, No. 19	lb.	.06½	@	.06¾
Cryptone CB, No. 21	lb.	.06½	@	.06¾
XX Zinc Sulphide, bbls.	lb.	—	@	.13
St. Joe, black label	lb.	.05¾	@	.06
green label	lb.	.05¾	@	.06
red label	lb.	.05¾	@	.06
Zinc Oxide—French Process				
Anaconda, lead free	lb.	.05¾	@	.06
Anaconda, selected lead free	lb.	.06¼	@	.06½
Florence White seal, bbls.	lb.	—	@	.10⅞
Green seal	lb.	.09⅝	@	.09⅞
Red seal	lb.	.08⅝	@	.08⅞
Yellows				
Chrome	lb.	.16	@	.16½
Ocher, dom. med.	lb.	.01½	@	.02

BLACKS

Arrow "Aerfloted"				
c.l. f.o.b. works, bags	lb.	.02¾	@	—
c.l. f.o.b. works, cases	lb.	.04¼	@	—
less c.l. f.o.b. works	lb.	.05¼	@	.07
Arrow "Aerfloted" Specification, c.l. f.o.b. wks., bags	lb.	.03	@	—
Bone, powdered	lb.	.05½	@	.12½
Carbon, compressed	lb.	.02¾	@	.07
uncompressed	lb.	.02¾	@	.07
"Certified." Cabot				
c.l. f.o.b. works, bags	lb.	.02¾	@	—
c.l. f.o.b. works, cases	lb.	.04¼	@	—
less c.l. f.o.b. works	lb.	.05¼	@	.07
"Disperso" f.o.b. La.	lb.	.028	@	.071
f.o.b. Texas	lb.	.02¾	@	.07
Drop, bbls.	lb.	.05½	@	.14
"Excello," compressed	lb.	.03	@	—
"Fumonex"	lb.	.02½	@	.06
"Gastex"	lb.	.02½	@	.06
Lampblack	lb.	.06	@	.08
"Micronex"				
c.l. f.o.b. works, bags	lb.	.03	@	—
c.l. f.o.b. works, cases	lb.	.04½	@	—
less c.l. f.o.b. works	lb.	.05¼	@	.07
"Supreme"	lb.	.02¾	@	—
Thermatomic—"P 33"	lb.	—	@	—
"Thermax"	lb.	—	@	—
United. "Dixie" and "Kosmos"				
c.l. f.o.b. works, bags	lb.	.02¾	@	—
c.l. f.o.b. works, cases	lb.	.04¼	@	—
less c.l. f.o.b. works	lb.	.05¼	@	.07
"Velvetex"	lb.	.02	@	.05

COMPOUNDING MATERIALS

Aluminum Flake	ton	21.85	@	24.50
Ammonia carbonate, lump	lb.	.10½	@	.12
Asbestine	ton	13.40	@	14.00
Barium carbonate (98-100%)	lb.	.05	@	—
Barium Dust	lb.	.05	@	.06
Barytes southern off-color	ton	12.00	@	18.00
Western prime white	ton	33.00	@	—
Basofor	lb.	.04½	@	—
Bentonite	lb.	.02	@	.03
Blanc fixe dry f.o.b. works	ton	60.00	@	75.00
Carrara filler	lb.	.01¾	@	.02
Catalpo (fact.)	lb.	.02	@	—
Chalk, precipitated				
Suprex white, extra lt.	ton	60.00	@	70.00
heavy	ton	45.00	@	55.00
Clay, Kaolin, domestic	ton	6.00	@	7.00
Aerfloted, Suprex	ton	6.50	@	8.00
Congaree	ton	9.00	@	—
Dark Blue Ridge	ton			
Dixie	ton			
Langford	ton			
Lexington	ton	10.00	@	22.00
Par-	ton			
Tensulite		15.00	@	—
Cotton Flock	lb.	.08	@	.16
Glues, extra white	lb.	.15	@	.22
medium white	lb.	.12	@	.14
Kalite No. 1	ton	30.00	@	55.00
Kalite No. 3	ton	40.00	@	65.00
Magnesia, carbonate	lb.	.05¾	@	.06
Mica	lb.	.04	@	—
Rottenstone (powdered)	ton	23.50	@	28.00
Soapstone, powdered	ton	16.00	@	18.00
Starch, powdered	cwt.	2.34	@	—
Talc, domestic	ton	12.00	@	15.00
Pyrax A	ton			
Whiting, commercial	cwt.	.85	@	1.10
English cliffstone	cwt.	1.50	@	1.70
Sussex	ton			
Witco	ton	20.00	@	—
Zinc Carbonate	lb.	.10½	@	—
Zinc Stearate	lb.	.20½	@	—

MINERAL RUBBER

Genasco (factory	ton	40.00	@	42.00
Granulated M. R.	ton			
Hard Hydrocarbon	ton			
Parmr, solid	ton	28.00	@	28.00
Pioneer. MR, solid	ton	40.00	@	42.00
Pioneer-granulated	ton	50.00	@	52.00
R & H Hydro-Carbon	ton	27.05	@	29.00

SOFTENERS

Acids				
Nitric, 36 degrees	cwt.	5.00	@	5.25
Sulfuric, 66 degrees	cwt.	1.60	@	1.95
Tartaric, crystals	lb.	—	@	.26½
Acids, Fatty				
Laurex	lb.	.15	@	.16
Stearex	lb.	.08	@	.12
Stearic, double pressed	lb.	.08	@	.12
Alkalies				
Caustic soda, 76%	cwt.	2.50	@	2.90
Soda Ash, 58% C.L.	cwt.	1.15	@	1.17½
Oils				
Corn, refined, bbls.	lb.	.05½	@	.06
Cottonseed, crude		.03½	@	.04
Degras (c.l. 100 bbls.)	lb.	.02¾	@	—
Less c.l. (10-25 bbls.)	lb.	.03	@	—
Lots less than 10 bbls.	lb.	.03¼	@	—
Fluxrite	lb.	.05½	@	.06¼
Palm Lagos	lb.	.03¼	@	.03½
Niger	lb.	.02¾	@	.03
Para-Flux	gal.	.17	@	—
Petrolatum, white	lb.	.08	@	.08½
Pigmentaroil	gal.	.18	@	.22
Pine, steam distilled	gal.	.59	@	.61
destructively distilled	gal.	.58	@	.62
Witco Palm Oil	lb.	.07½	@	—
Witco Softener (f.o.b. wks.)	lb.	.02	@	—
Resins and Pitches				
Pitch, Burgundy	lb.	.05	@	.06
coal tar	gal.	.05½	@	.06
pine, 200 lb. gr. wt. bbl.		7.00	@	—
Rosin, grade K, 280 lb. bbl.		4.35	@	—
Pigmentar	gal.	.18	@	.22
Tar Retort, 50 gal.	bbl.	10.00	@	11.00
Solvents				
Acetone, pure	lb.	.10	@	.13
Alcohol, denatured,				
No. 1 bbls.	gal.	.37	@	.45
Benzol, 90%	gal.	.20	@	.21
Carbon, bisulfide	lb.	.05½	@	.06¼
Carbon, tetrachloride	lb.	.06¼	@	.07
Dryolene (f.o.b. Okla.)	gal.	.10	@	.10½
Gasoline, steel bbls.	gal.	.16	@	—
Naphtha, solvent	gal.	.26	@	.28
Rub-Sol (f.o.b. Okla.)	gal.	.09	@	—
Turpentine, spirits	gal.	.45¼	@	—
wood	gal.	—	@	.40
destructively distilled	gal.	.35	@	—
Waxes				
Beeswax, white	lb.	.30	@	.32
Carnauba	lb.	.25	@	.26
Ceresin, white	lb.	.10	@	.11
Montan, crude	lb.	.05	@	.06
Ozokerite, black	lb.	.24	@	.28
green	lb.	.26	@	.30
Paraffin (c.l.—f.o.b. N. Y.)				
Yellow crude scale	lb.	.02	@	—
White crude scale 124/126	lb.	.02	@	—
Refined, 125/127	lb.	.02¾	@	—
Refined, 128/130	lb.	.03¼	@	—
Refined, 135/137	lb.	.04	@	—
Refined, 138/140	lb.	.06¾	@	—

ANTI-OXIDANTS

AgeRite, Gel	lb.			
Powder	lb.			
Resin	lb.			
White	lb.			
Albasan	lb.	.70	@	.75
Antox	lb.			
B-L-E	lb.	.57	@	.60
Neozone	lb.			
Oxynone	lb.	.68	@	.80
Resistox	lb.	.54	@	.57
Retardex	lb.	.35	@	.40
Stabilite	lb.	.57	@	.62
Stabilite Alba	lb.	.70	@	.75
VGB	lb.	.55	@	.66

SPECIALTIES

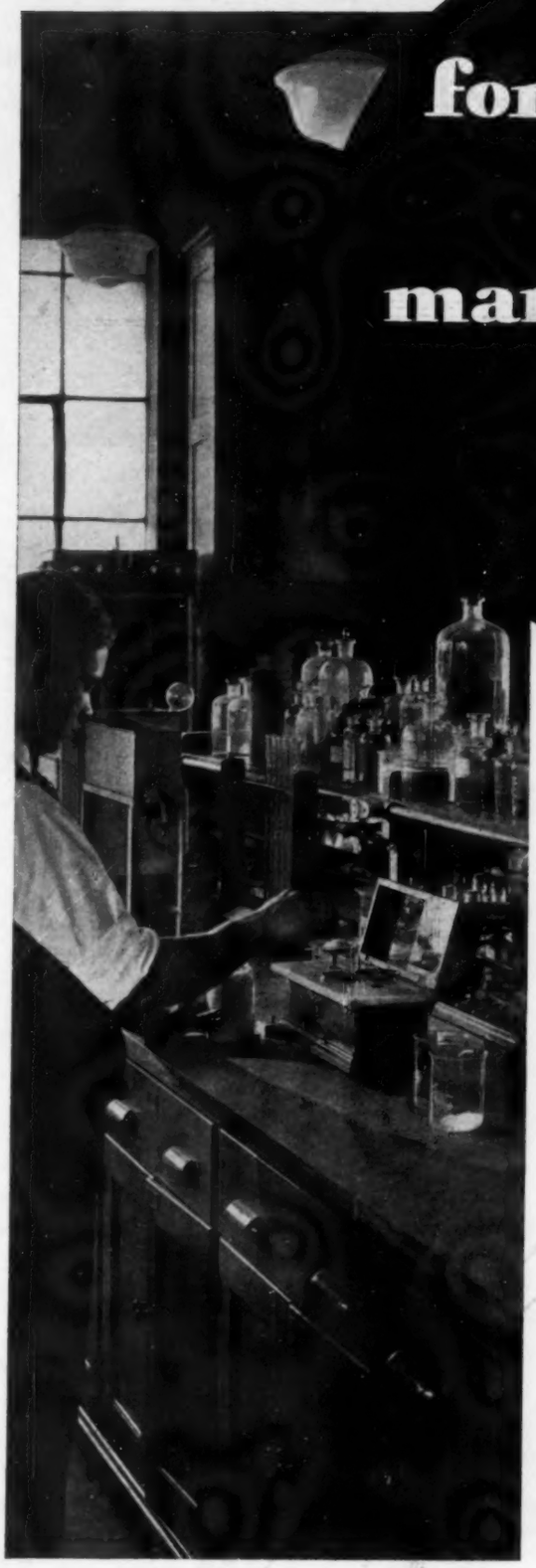
Aromatics- Rodo	lb.			
Sunproof	lb.	.35	@	.37½
Sponge Paste	lb.	—	@	.30
Tonox	lb.	.56	@	.60

SUBSTITUTES

Black	lb.	.06	@	.08
White	lb.	.08	@	.12
Brown	lb.	.07	@	.11

VULCANIZING INGREDIENTS

Sulfur Chloride (drums)	lb.	.04	@	—
Sulfur flour.				
Ref'n'd. 100% pure (bags)	cwt.	2.40	@	2.75
Commercial (bags	cwt.	1.75	@	2.10
Telloy	lb			
Vandex	lb.			



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The RUBBER AGE

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The Season's Greetings

CHRISTMAS will be upon us before another issue of THE RUBBER AGE reaches your hands. The past year has been a trying one to all but there is something about the spirit of Yuletide which transcends all depression. Consequently no amount of grief and hard business battles prevent our extending to the industry and our friends those ever pleasant sentiments of the season—

A Merry Christmas and a Prosperous New Year